



## *NOAA In Your Territory*

# **Guam**

***NOAA is an agency that enriches life through science. Our reach goes from the surface of the sun to the depths of the ocean floor as we work to keep citizens informed of the changing environment around them. From daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA's products and services support economic vitality and affect more than one-third of America's gross domestic product. NOAA's dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it.***

***The following is a summary of NOAA facilities, staff, programs, or activities based in, or focused on, your state or territory: Starting with highlights, then by [congressional districts and cities or towns](#), and then [territory-wide programs](#).***

### ***Highlights of NOAA in Guam***

<a href="#">Weather Forecast Office</a>	Tiyan
<a href="#">Manell-Geus Watershed Habitat Focus Area</a>	Merizo
<a href="#">Guam Sea Grant College Program</a>	Entire Territory
<a href="#">Satellite Assisted Search and Rescue</a>	Joint Region Marianas

Guam is also home to a National Marine Fisheries Service (NMFS) field office, National Ocean Service tidal gauges, NMFS Office of Law Enforcement, and multiple observing platforms.

### ***Apra Harbor***

#### **National Ocean Service (NOS) - [National Water Level Observation Network](#)**

The National Ocean Service (NOS) operates one long-term continuously operating tide station in Guam that provides data and information on tidal datum and relative mean sea level trends, and is capable of producing real-time data for storm surge and tsunami warning. This station is located in Apra Harbor. This station is critical to commercial shipping and U.S. Naval interests and the U.S. Military, NWS West Coast and Alaska Tsunami Warning Centers, commercial shipping, and the general population on Guam. The station is associated with a set of tidal benchmarks installed in the ground that is used to reference the height of the water levels and helps connect the water level to land.

### ***Joint Region Marianas***

#### **National Environmental Satellite, Data, and Information Service (NESDIS) - [Office of Satellite and Product Operations](#) - [Satellite Assisted Search and Rescue](#)**

NOAA Search and Rescue Satellite Aided Tracking (SARSAT) program has two antennas and associated ground equipment supporting MEOSAR and polar satellite search and rescue operations at the Joint Region Marianas base operated by the U.S. Navy. These ground systems, referred to as Local User Terminals (LUTs), receive distress signals relayed through polar orbiting or mid-earth orbiting satellites. The distress signals originate from radio beacons onboard ships, aircraft, or individuals carrying a beacon. The location of the distress signal is automatically forwarded to the SARSAT Mission Control Center, which notifies the appropriate Rescue Coordination Center. SARSAT is part of an international humanitarian effort helping to improve the rescue of persons in distress and has saved more than 9,350 lives in the United States since 1982.

### ***Merizo***

#### **National Marine Fisheries Service (NMFS), National Ocean Service (NOS) - [Manell-Geus Watershed Habitat Focus Area](#)**

The Manell-Geus Watershed has been selected as a Habitat Focus Area under NOAA's Habitat Blueprint. NOAA, led by the Office of Habitat Conservation, has selected ten Habitat Focus Areas (HFAs), place-based locations across the country to maximize the effectiveness of habitat conservation. While each HFA focuses on individual habitat conservation goals outlined in their Implementation Plan, the overarching goal is to demonstrate results in a focused area in a short time period. The Manell-Geus Watershed contains extensive seagrass beds and coral reefs that support the area's strong fishing tradition, and provide important forage and resting habitat for sea turtles. Erosion and sedimentation caused by a variety of land-based activities are negatively impacting coral reef health. NOAA Fisheries and the National Ocean Service are working with partners and the local community to reduce sedimentation to encourage resilient reefs and terrestrial habitats that will sustain the people of Merizo into the future.

### ***Mongmong Toto-Maite***

#### **National Marine Fisheries Service (NMFS) - [Office of Law Enforcement](#)**

NOAA's Office of Law Enforcement is the only U.S. conservation enforcement agency that is exclusively dedicated to Federal fisheries and marine resource enforcement. Its mission is to protect global marine resources by enforcing domestic laws, international treaties, and regulations dedicated to protecting wildlife, and their natural habitat. Our special agents and enforcement officers ensure compliance with these laws and take enforcement actions if there are violations. In addition, the Cooperative Enforcement Program gives OLE the ability to leverage its resources with the assistance of 27 coastal states and U.S. territorial marine conservation law enforcement agencies in supporting its Federal enforcement mission. Effective fisheries law enforcement is critical to creating a level playing field for U.S. fishermen and enabling sustainable fisheries to support all the communities throughout the Pacific Islands. The Guam field office, located in Mongmong Toto-Maite, is part of the Office of Law Enforcement's Pacific Islands Division which is headquartered in Honolulu, Hawaii.

### **Pago Bay**

#### **National Ocean Service (NOS) - [Water Level Sensor](#)**

The National Ocean Service (NOS) operates a tide station in Pago Bay that provides data and information on tidal datum and relative mean sea level trends, and is capable of producing real-time data for storm surge and tsunami warning. This station is located at the University of Guam campus. This station is operated in partnership with the National Weather Service (NWS) Tsunami Program. This station is critical to NWS National and Pacific Tsunami Warning Centers. The station is associated with a set of tidal benchmarks installed in the ground that is used to reference the height of the water levels and helps connect the water level to land.

### **Tiyan**

#### **National Weather Service (NWS) - [Weather Forecast Office](#)**

Located near the International Airport in Guam, this NWS Weather Forecast Office (WFO) has public, aviation and marine forecast and warning responsibility for Guam and the Commonwealth of the Northern Mariana Islands and the surrounding ocean areas. In addition, WFO Guam has international responsibilities for aviation advisories and forecasts for the tropical Pacific from 130E to 160E; public tropical cyclone watch, warnings and advisory products for the tropical islands of the northwest Pacific; and forecast support for weather service programs involving the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau under the Compact Agreement of Free Association treaties. Highly trained forecasters issue warnings and forecasts for events, including severe thunderstorms, tornadoes, winter storms, floods, and heat waves. This essential information is provided to the general public, media, emergency management and law enforcement officials, the aviation and marine communities, agricultural interests, businesses, and others. Information is disseminated in many ways, including through dedicated government channels, satellite, the Internet, and NOAA Weather Radio All Hazards. Forecasters also provide Impact-based Decision-Support Services (IDSS), both remotely and on-site, during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts. The WFO collects and disseminates precipitation, river, and rainfall data, and prepares local climatological data. Each WFO has a Warning Coordination Meteorologist who actively conducts outreach and educational programs, which helps build strong working relationships with local partners in emergency management, government, the media and academic communities. The WFO operates Automated Surface Observing Stations (ASOS), as well as the local Doppler Weather Radar, which provides critical information about current weather conditions. The radar data enables forecasters to issue warnings for tornadoes, severe thunderstorms, and flash floods.

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### **Entire Territory**

#### **National Marine Fisheries Service (NMFS) - [Pacific Islands Regional Office](#) and [Pacific Islands Fisheries Science Center](#)**

NMFS is responsible for the management, conservation, and protection of living marine resources within the U.S. Exclusive Economic Zone. The Pacific Islands Region includes the waters surrounding American Samoa, Guam, Hawaii, and the Commonwealth of the Northern Mariana Islands as well as the Pacific Remote Island Areas. It is the largest geographic area within NMFS jurisdiction, with a U.S. Exclusive Economic Zone of more than 1.7 million square nautical miles of ocean. Using the tools provided by the *Magnuson-Stevens Fishery Conservation and Management Act*, NMFS monitors and assesses fish stocks, promotes sustainable fisheries, develops and ensures compliance with fisheries regulations, restores and protects habitats, and works to reduce wasteful fishing practices. Under the *Marine Mammal Protection Act* and the *Endangered Species Act*, NMFS regulates and conducts research supporting the recovery of protected marine species (e.g., sea turtles, whales, and dolphins). NMFS also co-manages four marine national monuments in the Pacific Islands Region: Rose Atoll Marine National Monument, Marianas Trench Marine National Monument, Pacific Remote Islands Marine National Monument, and Papahānaumokuākea Marine National Monument.

Regional Office staff in the Guam field office review local Army Corps of Engineer permit applications and conduct extensive fieldwork to support project reviews. The staff provide local expertise and valuable information on habitat and protected resources to local governments and agencies. The office coordinates activities of the NMFS Coral Program and works closely with local coral reef program points of contact to fund projects in the area. The Regional Office also fosters sustainable aquaculture in the region. The regional aquaculture coordinator assists federal and state agencies with permitting and other activities. They also support aquaculture outreach and education, and work with industry, academia, and other stakeholders on a variety of regional marine aquaculture topics. Both the Regional Office and Science Center have offices in Hawaii and field offices serving American Samoa and the Northern Mariana Islands in addition to Guam.

**National Marine Fisheries Service (NMFS) and National Ocean Service (NOS) - [Damage Assessment, Remediation, and Restoration Program](#)**

NOAA's Damage Assessment, Remediation, and Restoration Program (DARRP) assesses and restores habitat, fisheries, protected species and recreational uses that have been harmed by oil spills, chemical releases, and ship groundings. Working with federal, state, and tribal entities, and responsible parties, we have recovered funding from responsible parties for restoration of critical habitats, fisheries, protected species and recreational uses nationwide. These projects promote recovery of the ecosystem and provide economic benefits from tourism, recreation, green jobs, coastal resiliency, property values and quality of life.

**National Ocean Service (NOS) – [Regional Geodetic Advisor](#)**

The Regional Geodetic Advisor is a National Ocean Service (NOS) employee that resides in a region and serves as a liaison between the National Geodetic Survey (NGS) and its public, academic and private sector constituents within their assigned region. NGS has a Regional Geodetic Advisor stationed in Honolulu, Hawaii serving the Pacific region including Guam. The Geodetic Advisor provides training, guidance and assistance to constituents managing geospatial activities that are tied to the National Spatial Reference System (NSRS), the framework and coordinate system for all positioning activities in the Nation. The Geodetic Advisor serves as a subject matter expert in geodesy and regional geodetic issues, collaborating internally across NOS and NOAA to ensure that all regional geospatial activities are properly referenced to the NSRS.

**National Weather Service - [NEXRAD \(WSR-88D\) Systems](#)**

NEXRAD is used to warn the people of the United States about dangerous weather and its location. This radar technology allows meteorologists to warn the public to take shelter with more notice than ever before. The NEXRAD network provides significant improvements in severe weather and flash flood warnings, air traffic safety, flow control for air traffic, resource protection at military bases, and management of water, agriculture, forest, and snow removal. NEXRAD radar has a range of up to 250 nautical miles, and can provide information about wind speed and direction, as well as the location, size, and shape of precipitation. There are 159 operational NEXRAD radar systems deployed throughout the United States and overseas, of which one is on Guam.

**National Weather Service (NWS) - [Automated Surface Observing Systems Stations](#)**

The Automated Surface Observing Systems (ASOS) program is a joint effort of the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense (DOD). ASOS serves as the Nation's primary surface weather observing network. ASOS is designed to support weather forecast activities and aviation operations and, at the same time, support the needs of the meteorological, hydrological, and climatological research communities. ASOS works non-stop, updating observations every minute, 24 hours a day, every day of the year observing basic weather elements, such as cloud cover, precipitation, wind, sea level pressure, and conditions, such as rain, snow, freezing rain, thunderstorms, and fog. There is one ASOS station in Guam.

**National Weather Service (NWS) - [Cooperative Observer Program Sites](#)**

The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the Nation's weather and climate observing network of, by and for the people. More than 10,000 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data are representative of where people live, work and play. The COOP was formally created in 1890 under the NWS Organic Act to provide observational meteorological data, usually consisting of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals, required to define the climate of the United States and to help measure long-term climate changes, and to provide observational meteorological data in near real-time to support forecast, warning and other public service programs of the NWS. The data are also used by other federal (including the Department of Homeland Security), state and local entities, as well as private companies (such as the energy and insurance industries). In some cases, the data are used to make billions of dollars' worth of decisions. There are 55 COOP sites across Guam and the surrounding ocean area. .

**National Weather Service (NWS) - [NOAA Weather Radio All Hazards Transmitter](#)**

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service (NWS) forecast office. NWR broadcasts official NWS warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week. Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it the single source for comprehensive weather and emergency information. In conjunction with federal, state, and local emergency managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards – including natural (such as earthquakes or avalanches), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 Telephone outages). Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the NWS. NWR includes 1,100 transmitters covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories.

There is one NWR transmitter in Guam.

**Office of Oceanic and Atmospheric Research (OAR) - [Cooperative Global Air Sampling Network](#)**

NOAA's Earth System Research Laboratory Global Monitoring Laboratory (ESRL/GML) operates a Cooperative Global Air Sampling Network to measure the distribution and trends of carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), the two gases most responsible for human-caused climate change, as well as other greenhouse gases and volatile organic compounds. Samples are collected weekly at fixed locations and on several commercial ships. The air samples are delivered to ESRL/GML, located in Boulder, CO. The observed geographical patterns and small but persistent spatial gradients are used to better understand the processes, both natural and human induced, that underlie the trends. These measurements help determine the magnitude of carbon sources and sinks.

**Office of Oceanic and Atmospheric Research (OAR) - [Guam Sea Grant College Program](#)**

The National Sea Grant College Program (Sea Grant) is a federal-university partnership administered by NOAA that integrates research, extension outreach, and education. Sea Grant forms a national network of 34 programs in all U.S. coastal and Great Lakes states, Puerto Rico, and Guam. University of Guam Sea Grant works with numerous stakeholders to sustain and develop island environments, incorporating the knowledge and cultural perspectives of the island's peoples. Key projects include competitive funding for graduate student research, watershed conservation and restoration, and outreach activities about Micronesia's coastal topics and issues.

**National Ocean Service (NOS) - OR&R [Scientific Support Coordinator and Regional Resource Coordinator](#)**

NOAA's Office of Response and Restoration (OR&R) brings decades of experience, technical expertise and scientific analysis in response to oil and hazardous chemical spills. Eleven regionally based Scientific Support Coordinators (SSCs) harness the input of a multi-disciplinary team to address issues such as oil slick trajectory forecasting, environmental

tradeoffs, best practices, resources at risk, and chemical hazard assessment to reduce risks to coastal habitats and resources. OR&R also helps develop preparedness plans that identify spill response actions with the greatest environmental benefit and trains hundreds of members of the response community each year on the scientific and technical aspects of spills. The SSC for Guam is located in Honolulu, HI.

OR&R identifies and quantifies environmental injury caused by releases of oil and hazardous materials. Our network of Regional Resource Coordinators (RRCs) work on multi-disciplinary scientific, economic, and legal teams with the goal of securing the appropriate amount and type of restoration required to restore injured NOAA trust resources and compensate the public for their lost use. We collaborate with NMFS Restoration Center and NOAA General Council through the Damage Assessment, Remediation, and Restoration Program to ensure the process is efficient, legally defensible and restoration focused.

**National Ocean Service (NOS) - [Pacific Islands Environmental Response Management Application](#)**

Assessing important spatial information and designing successful restoration projects rely upon interpreting and mapping geographic information, including the location, duration, and impacts from oil spills, other hazardous materials, or debris released into the environment. Pacific Islands Environmental Response Management Application (ERMA®) is an online mapping tool that integrates both static and real-time data, such as Environmental Sensitivity Index maps, ship locations, weather, and ocean currents, in a centralized, easy-to-use format for environmental responders and decision makers. ERMA staff continued to work closely with Federal and State agencies for drills, hurricane response, and incidents. Maintained habitat data for sensitive species. Ensured data was kept up-to-date and data collection methods were kept consistent.

**National Ocean Service (NOS) - OR&R [Marine Debris Projects and Partnerships](#)**

The NOAA Marine Debris Program (MDP) leads national and international efforts to research, prevent, and reduce the impacts of marine debris. The program supports marine debris removal, prevention, and research projects in partnership with state and local agencies, tribes, non-governmental organizations, academia, and industry. The MDP Pacific Islands Regional Coordinator supports coordination efforts with regional stakeholders, provides support to grant-funded projects, tracks progress of projects, and conducts regional marine debris outreach to local audiences. The MDP is working with the Guam Environmental Protection Agency and partners to remove more than 2,400 tires, weighing 13-23 metric tons, that make up an artificial reef from Cocos Lagoon. The project will also conduct outreach efforts to the local community to bring awareness to the marine debris issue. The MDP is currently expanding its partnership and involvement in this territory, including the collaborative development of a marine debris emergency response guide.

**National Ocean Service (NOS) - [U.S. Integrated Ocean Observing System](#) ([Pacific Islands Ocean Observing System](#))**

The U.S. Integrated Ocean Observing System, or IOOS®, is a federally and regionally coordinated observing system with 17 interagency and 11 regional partners. The System addresses regional and national needs for coastal, ocean, and Great Lakes data and information. This includes gathering and disseminating regional observations; data management; modeling and analysis; education and outreach; and research and development. The Pacific Islands Ocean Observing System (PacIOOS) empowers ocean users and stakeholders throughout the Pacific Islands, by providing accurate and reliable coastal and ocean information, tools, and services that are easy to access and use. Fishermen, commercial operators, surfers, resource managers, scientists, and many others rely on PacIOOS' real-time, model, and archival ocean information to make well-informed decisions and to enhance our understanding of the Pacific Ocean. PacIOOS is one of 11 regional associations of the U.S. Integrated Ocean Observing System. Its region spans across the U.S. Pacific Islands, including the State of Hawai'i, the U.S. Territories and Commonwealth, and the Freely Associated States.



**National Ocean Service (NOS) – [National Coastal Zone Management Program](#)**

Through a unique federal-state partnership, NOAA's Office for Coastal Management works with the Guam Bureau of Statistics and Plans to implement the National Coastal Zone Management Program in Guam. NOAA provides the state coastal management program with financial and technical assistance to further the goals of the Coastal Zone Management Act and ensure coastal waters and lands are used in a balanced way to support jobs, reduce use conflicts, and sustain natural resources. The office also provides a regionally focused staff member to serve as the liaison between NOAA and the Guam Coastal Program. With support from the national office, Guam's program supports increased government and community cooperation, showcases effective best management practices for developers, and fosters environmental stewardship by connecting students with the local environment.

**National Ocean Service (NOS) – [Digital Coast](#)**

The Digital Coast is a focused information resource developed to meet the unique needs of coastal communities. Developed and maintained by NOAA's Office for Coastal Management, content comes from hundreds of organizations, including federal, state, and local agencies, plus private sector and non-profit contributors. The Digital Coast website provides not only site-specific coastal data, but also related the tools, training, and information needed to make these data useful for coastal decision makers.

**National Ocean Service (NOS) - [Coastal Management Fellowship](#)**

This program matches postgraduate students with state and territory coastal zone programs to work on two-year projects proposed by the state or territory. The Guam Coastal Management Program is hosting a fellow who is helping to update the draft Seashore Reserve Plan in conjunction with partner agencies in order to have the plan submitted through the Guam Territorial Planning Process for adoption.

**National Ocean Service (NOS) – [National Coastal Resilience Fund](#)**

The National Coastal Resilience Fund is a partnership effort between NOAA and the National Fish and Wildlife Foundation (NFWF) to restore, increase, and strengthen natural infrastructure to protect coastal communities, while also enhancing habitat for fish and wildlife. In Guam, the NCRF awarded a project in FY19 to upscale current staghorn restoration efforts. The project will undertake additional research to develop needed best practices that assist restored coral community adaptation to projected future climate conditions.

**National Ocean Service (NOS) - [Coral Reef Conservation Program](#)**

NOAA's Coral Reef Conservation Program brings together multidisciplinary expertise from over 30 NOAA offices and partners to protect, conserve, and restore coral reef resources. The program focuses on three threats to coral reefs - climate change, unsustainable fishing practices, and land-based sources of pollution - as well as coral reef restoration. In response to identified threats and management priorities developed by coral reef managers in Guam, the program invests in implementing conservation action plans to reduce pollutant loads to priority watersheds, working with communities to address coral threats, and developing strategies to monitor and restore reefs affected by bleaching events. Additionally, NOAA directly supports coral research and watershed restoration efforts in Manell-Geus, a NOAA Habitat Focus Area. Examples of projects include: coordinating community monitoring in Guam's marine preserves, teaching watershed restoration techniques to community organizations and the public, and reducing sedimentation within the Achang Reef Flat Marine Preserve and Cocos Lagoon. The Coral Reef Conservation Program liaison is located in Tiyan.

**National Ocean Service (NOS) – [National Coral Reef Management Fellowship](#)**

The National Coral Reef Management Fellowship Program is a partnership between Nova Southeastern University's National Coral Reef Institute, NOAA's Coral Reef Conservation Program, the U.S. Department of Interior Office of Insular Affairs, and the U.S. Coral Reef All Islands Committee. The program recruits Coral Reef Management Fellows for the seven U.S. coral reef jurisdictions, including Guam. The Fellow for Guam is compiling information such as historical

reports, imagery, interviews, and local regulations to better understand the current state of mangrove and seagrass ecosystems, and use that knowledge to organize community based restoration initiatives.

**National Marine Fisheries Service (NMFS) - [Cooperation with States Program](#) and [Species Recovery Grants](#)**

Under the authority of section 6 of the Endangered Species Act, the Cooperation with States Program brings states, NMFS, and other partners together to recover threatened and endangered species. A total of 25 coastal states and U.S. territories, including Guam, currently participate in this program. Competitive grants are awarded to states through the Species Recovery Grants to States Program to support management, monitoring, research and outreach efforts for species that spend all or a portion of their life cycle in state waters. The funded work is designed to prevent extinctions or reverse the decline of species, and restore ecosystems and their related socioeconomic benefits. The Guam Department of Agriculture has received funding through this program to support research focused on green sea turtles.

**National Marine Fisheries Service (NMFS) - [National Marine Mammal Stranding Network](#) and [John H. Prescott Marine Mammal Rescue Assistance Grant Program](#)**

The National Marine Mammal Stranding Network and its trained professionals respond to dead or live marine mammals in distress that are stranded, entangled, out of habitat or otherwise in peril. Our long-standing partnership with the Network provides valuable environmental intelligence, helping NOAA establish links among the health of marine mammals, coastal ecosystems, and coastal communities as well as develop effective conservation programs for marine mammal populations in the wild. There is one stranding network member in the territory. NOAA Fisheries funds eligible members of the Stranding Network through the competitive John H. Prescott Marine Mammal Rescue Assistance Grant Program. In FY20, 43 competitive grants were awarded nationwide for a total of \$3.7 million.

**National Ocean Service (NOS) - Students for [Zero Waste Week](#)**

Students are inviting their local communities to "Go Green and Think Blue" by joining them in the annual *Students for Zero Waste Week campaign*. During this campaign led by the Office of National Marine Sanctuaries, students focus on reducing land-based waste in order to protect the health of local marine environments. These young leaders are raising awareness of how single-use plastic and other types of litter affect the health of local watersheds, national marine sanctuaries, and the ocean. In addition, some schools are looking at ways to reduce their energy use on campus with hopes of raising awareness of how the burning of fossil fuels also impacts the health of the ocean.

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